Before the

FEDERAL COMMUNICATIONS COMMISSION

Washington, D.C. 20554

In the Matter of Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation	)))	ET-Docket No. 93-62 and Report and Order FCC 96-326

The Secretary
FEDERAL COMMUNICATIONS COMMISSION
1919 M Street N.W. Room 222
Washington, D.C. 20554

To: The Commission

Re: A: Reply filed after the filing date to an opposition to a petition for reconsideration

B: If motion to accept reply is denied, then accept reply as an ex parte comment

A. Introduction:

Arch Communications Group, Inc. ("Arch") (October 8, 1996) and the Cellular Telephone Industry Association ("CTIA") (October 8, 1996) both submitted comments in opposition to the concerns of the Association, and instead supported the 'transition period', in which less protective standards would be in effect than those after the transition period, be extended for one year after release of the revision of Bulletin No. 65. Also, in opposition to the Association's concerns, Arch also submitted comments supporting categorical exemption of paging services and to eliminate an obligation to reduce exposures at sites with an out-of-compliance condition for those operators whose exposures are less than 10% of the maximum permitted, and inappropriately claims such removal of obligation was "demonstrated" [ARCH at 7] to meet Commission objectives.

The above claims are not only incorrect, but fail to address the evidence the Association has presented which indicate that be acceding to the above requests of CTIA and ARCH there would be adverse public health risks. This is the essential fault of the CTIA and ARCH claims. For while it may be debated how much effort would be needed for operators to be ready by January 1, 1997, such debate can only reasonably occur after acknowledging the evidence of the

risk to the public health by extending the time less protective standards would be in effect, rather than the more stringent Commission new rules, or the still more stringent Association criteria.

Hence, when the Commission considers comments of ARCH and CTIA, these must be weighed against the adverse public health effects evidenced in the Association's petition and the key requests therein for which there is abundant and convincing evidence. Thus, such key requests are reviewed here to conveniently put in perspective the increased public risk delaying implementation, of not adopting the requests of the Association.

B. Key requests were made by the Association and for which it provided abundant and convincing evidence, and which indicate that the requests supported by ARCH and CTIA would be contrary to the public health and the public interest. These key requests for which there was given abundant supporting evidence are:

1. Only the more protective elements of IEEE 1991 should be applied, and for a short time.
2. Exposures should be kept as low as reasonably achievable
3. The hazard threshold should be 17.5% of its current level based just upon careful examination of the Final List of Papers Reviewed for IEEE 1991, and focusing of behavioral disruption studies which IEEE 1991 identified as appropriate for standard setting.
4. Power densities should be divided by a factor of 2.5 to properly estimate internal body heating for a range of frequencies, especially those for personal communication services - based on the 1992 studies of Gandhi using the FDTD measurement method which the Commission found valid. (and thus using #3 and #4 that Commission limits should be about 7% of their current values)
5. Proposed evaluation methods will not identify out-of-compliance conditions.

Review of specific key requests and the abundant evidence supporting them:

1. Not to apply to Personal Communication Services ("PCS") the irrelevant, invalid, or less protective exposure criteria of IEEE C95.1-1991("IEEE 1991") RF safety standard, thereby sanctioning this standard, and putting the public health to unnecessary risk (and certainly do not extend the transition period, thereby extending the time period this inappropriate standard could apply.) The evidence of the Association shows includes

[see Petition of the Association at pages 9 through 14. Note that the line on page 14, "2. Avg SAR of 1 year old (est.) 0.0804 0.0846 0.0842 0.0825 W/kg" is a typographical oversight and should be ignored.]:

(i) For PCS services, the IEEE 1991 limits are 29% higher than provided for Commission previous or new rules for some workers and for infants, children and other members of the general public who may be in places of public transit such as bus stops, parks, airports, sidewalks, and other places of transient passage.

(ii) For infants in places of transient passage, exposure limits of IEEE 1991 can cause absorbed RF power levels which exceed the basic health and safety protections provided by IEEE 1991, based upon the dosimetry references provided within the IEEE 1991 standard itself.

(iii) Based on new scientific studies by Gandhi (1992), the higher exposure limits allowed in IEEE 1991 for workers and for adults in places of transient passage (bus stops, parks, sidewalks, airports) will exceed protections upon which the Commission's previous and new rules are based. The Commission reported the computer simulation method of Gandhi, called FDTD, a valid method. [see Association Petition at 14, and Comments of David Fichtenberg to Petition for Reconsideration in this proceeding of Cellular Phone Task Force at 8-10].

(iv) By adopting in its entirety IEEE 1991, the Commission is sanctioning methods, criteria, and rationale which are irrelevant, erroneous, invalid, or contrary to the Commission's previous or new rules, and disapproved of by federal health agencies (e.g. categorical exemption of hand held devices opposed by the Food and Drug Administration).

(iv) EPA recommended against adopting IEEE 1991 and, instead, recommended primarily the standard of the National Council of Radiation Protection and Measurements ("NCRP"). The basis for this rejection of IEEE 1991 was:

(a) too high values of the IEEE 1991 exposure limits for frequencies above 1500 MHz, and which includes PCS frequencies,

(b) "unwarranted" claims of it limits being safe for all mechanisms of interaction,

(c) inappropriate and vague definitions based on 'awareness of the exposure', and

(d) improper claims that no groups were more at risk than others - whereas EPA studies show the contrary.

(v) The Commission has stated it will basically adopt the EPA recommended NCRP, and not adopt the IEEE 1991 standard, except that some parts of the Commission standard will have limits for some conditions the same as that of IEEE 1991.

(vi) The Commission has stated it will follow during its transition period' its previous exposure criteria until its new rules take effect (and not introduce less protective standards as it, in fact did by adopting IEEE 1991 during its 'transition period'.

2. Adopt into the standard the rule, "RF exposures from Commission licensees facilities should be kept 'as low as reasonably achievable.' ("ALARA") [see Association petition at 5]. Following this principle, except for the most 'insignificant' exposures, all operators would be obliged to show what they are doing to meet this criteria, even if exposures are below some arbitrary Commission exposure limit. Consequently, by seeking to extend the implementation date ARCH and CTIA are opposing to follow the ALARA principle. The Association justified this rule in its petition with abundant and convincing evidence [Association petition at page 18]:

(i) The Commission has said it will defer to the federal health agencies on what the RF standards should be, since it did not have health and safety expertise,

(ii) The National Institute of Occupational Safety and Health ("NIOSH") explicitly told the Commission that the ALARA principal should be embodied in the Commission's standard, and stated, *"The standard should note that other health effects may be associated with RF exposure and that exposure should be minimized to the extent possible."* [while the 'standard' here is IEEE 1991, since the Commission standard uses the same hazard threshold and safety factors as IEEE 1991, the same NIOSH directive applies to the Commission's rule]

(iii) There is also precedent for the ALARA principle in federal ionizing radiation standards [10 CFR §20.1(c)(1983)], in the standard of the International Protection Association [Association petition at footnote 104], and State of Washington law [Id at footnote 135].

(iv) The Commission's adopting the ALARA principle shows the Commission is taking 'reasonable care', given EPA reports to the Commission that adverse effects (cancer) have been

documented below the hazard threshold upon which the Commission's standard is derived.

(v) Demonstrating reasonable care by explicitly stating its limits are not necessarily safe for all mechanisms of interaction may be important to protect the Commission and, ultimately, the taxpayers, from tort liability suits by states, local jurisdictions, or individuals.

(vi) Adopting the ALARA principle expressly indicates the Commission does not imply is rules are safe for all mechanisms of interaction, a claim EPA found "unwarranted."

3. Accept that there is abundant evidence that the hazard threshold should be 0.7 W/kg or less, e.g. 17.5% or less of the current 4 W/kg hazard threshold upon which the Commission's exposure criteria are based.

Noting that there is much debate as to whether a given research paper is appropriate for standard setting, the Association examined the Final List of Papers Reviewed For IEEE C95.1-1991 ("Final List"). This was done since IEEE 1991 has already identified these papers as high quality scientific papers appropriate for use in standard setting. Moreover, of these papers the Association focused on papers which reported disruption of operant behavior, e.g. performance of a learned task or learning new task, since the IEEE 1991 standard concluded,

- *"the most sensitive measures of potentially harmful biological effects were based on the disruption of ongoing behavior,"*
- *"disruption of ongoing behavior is a statistically reliable endpoint," and*
- *"IEEE Subcommittee IC focused on evidence of behavior disruption."*

The Association then identified studies within the IEEE 1991 Final List where a disruption of behavior occurred below the 4 W/kg threshold used by IEEE 1991. These included:

(i) The Association noted IEEE 1991 identified 3.2 to 4 W/kg as the range in which thresholds were found for disruption of operant behavior in non-human primates based on four studies. The Association found it served logic and the public health to consider the lower end of this range (3.2 W/kg) and not the upper end which IEEE 1991 inappropriately adopted as its hazard threshold, since 'threshold' implies selecting 'lower' not 'upper' limits of a range. This consideration alone would result in the standard being 80% of its present limits.

(ii) The Association also noted that of the four non-human primate studies identified above by IEEE, that the author of one of the studies explicitly stated that the threshold for behavioral disruption found was 2.5 W/kg and not in the range of 3.2 to 4 W/kg erroneously reported by IEEE 1991.[see Opposition of Association to AT&T at page 3, item #5.2]

(iii) The Association reported five (5) other studies among the IEEE Final List papers with behavioral disruptions reported at levels as low as 0.7 W/kg (and even one more at 0.2 W/kg as a result of animals being given a medication used to treat children with Attention Deficit Disorder).[Association petition at page 10,11] Consequently, by some oversight, lack of not applying public health methods of caution and prudence, or some lack of due process which resulted in the above IEEE Final List studies not being used to properly establish that 0.7 W/kg (or lower) is the proper hazard threshold.

(iv) Moreover, support the hazard threshold is at least as low as 0.7 W/kg, is further supported by studies of disruption of learned or learning behaviors published after the 1985 'cut-off' publishing date of IEEE 1991 and include:

(a) Study co-authored by O.P. Gandhi, a co-chairman of the IEEE C95.1-991 committee, which also reported behavioral disruption at 0.7 W/kg.[Assoc. petition at footnote133]

(b) Study co-authored by the Vice-chairman of the IEEE balloting committee, who was also the chairman of NCRP 1986 reporting disruption in learning at 0.6 W/kg. [Id at 131].

(c) The two authors (D'Andrea and de Lorge) whose 4 non-human primate studies were selected by IEEE 1991,mentioned above, subsequently made a review of behavioral disruption studies at 2450 MHz and reported, *"that a threshold for significant behavioral effects at 2450 MHz is between 0.4 and 0.7 W/kg."* [page 333 of Association petition footnote ref. 66] Thus, these studies provide abundant and convincing evidence that the hazard threshold which the Commission adopted of 4 W/kg) is too high, and that a hazard threshold of at least as low as 0.7 W/kg is well justified by evidence only in IEEE Final List record, as well as from other studies.

(v) All the other studies noted in the Petition of the Association with adverse affects below the 4 W/kg hazard threshold, and many below the 0.7 W/kg hazard threshold, further support the conclusion that the hazard threshold should be 0.7 W/kg or lower.

Hence, there is strong and abundant evidence both from IEEE Final List papers and from other papers of well respected researchers that 0.7 W/kg or less is the appropriate hazard threshold and not the 4 W/kg hazard threshold from which Commission limits are derived, and if the Commission is moved to excercising "an abundance of caution," then even lower hazard thresholds may be justified as given in the petition of the Association.

4. Accept that new studies by O.P. Gandhi, co-chairman of the IEEE 1991 committee, indicate there is a significant error in the assumptions used by the Commission to determine the relationship between external power density exposures due to RF transmitters and internal absorption of RF power by the body. The implications of Gandhi's findings (using the 'FDTD' computer simulation measurement method noted in 1 (iii) above) are that to correctly predict internal absorption of RF power based on external power irradiated from RF transmitters, the Commissions external power density criteria need to be divided by a factor of 2.5, at least in the frequency range for which many personal wireless services occur (e.g.1500 MHz to 6000 MHz, and some adjustment for lower frequencies). Since the Commission has found Gandhi's methods valid, and since it is known that the specific absorption rate (SAR) of RF power tends to decrease to a plateau and to remain there (at least for the range of 3 MHz to 6000 MHz for which SAR is applicable), and since it has been reported that one year old infants have an SAR about 2 fold or more than an adult for frequencies above 1500 MHz, and the SAR of a newborn would be even more than 2 fold of an adult, the Association has shown with abundant and convincing evidence that present formulas for finding the power density for a given average whole body SAR need to be divided by a factor of 2.5. Hence, for the Commission to provide the current whole body SAR protections, its power density exposure limits must be divided by a factor of 2.5 for some frequencies.

Consequently, Commission exposure limits above 1500 MHz should be 7% of proposed power density limits in range where SAR is meaningful and adjustments below 1500 are also

indicated, since applying #3 and #4 above it is found 17.5% of the current 4 W/kg / 2.5 = 7% of current Commission power density exposure limits above 1500 MHz - and this is based on sources which the Commission has accepted as valid studies (i.e. IEEE Final List papers) and valid methods (i.e. the FDTD method used by Gandhi). [It is understood that within a few weeks the Commission could obtain FDTD studies verifying needed exposures to protect newborns.]

5. Abundant and convincing evidence was given by the Association that the Commission's rules do not properly identify transmitters or groupings of transmitters which may cause out-of-compliance conditions. The Association as well as many telecommunications companies noted it will be difficult for each of a multitude of operators 'co-located' on a site-property to determine what are the total exposure levels at the site. Moreover, the Association has noted that transmitters may be independently located on different properties which are nearby each other, as may occur when there are a number of properties located on the top of a hill or other high point. In such cases it is difficult for separate site-owners to know what the total exposures may be. Hence, the Association has strongly requested the Commission to provide a means to overcome these deficiencies by assigning independent third parties to monitor exposure over large areas, and for the Commission to improve its database so it contains current geographic coordinates for all licensed facilities, information available 'on line' for identifying all Commission licensed transmitters, and providing the parameters and software to roughly estimate exposure at any location and height (as did the EPA in its past studies of the impact of RF exposure criteria on Commission licensees.) [see Association petition at pages 6, 8, and David Fichtenberg response to Notice of Public Information Collections of October 15, 1996 in this proceeding]

C. Weakness of CTIA and ARCH comments

ARCH and CTIA do not provide convincing comments to extend the 'transition period', since they do not address these above considerations. Rather, they comment as if current exposure limits are safe, and that only their convenience should be considered concerning when new limits should go into effect. Also, they do not address 'grandfathering' in issues which may apply if the Commission rejects the Associations requests that the new limits should apply to all licensees.

Moreover, CTIA's claim that *"determining whether a particular facility is located on a roof-top or a stand-alone tower will require extensive research and time"* is unconvincing. Every maintenance crew servicing transmitters knows where they are, their approximate height, and if there are any transmitters co-located at the site. Also, the engineering drawings needed for local jurisdiction land use and building permits provide the needed location, height, and power estimates. Thus, it should be relatively fast for each office to identify sites which may need evaluation. Since cellular phone, paging, and PCS companies report their facilities are of very low power, then there should be few if any sites that need evaluations or power adjustments.

D. The Associations request need to be met to meet key Commission and industry goals.

If the Commission and its telecommunications licensees want to avoid tort liability, inconsistent standards for non-personal communications services transmitters, and have consistent stable, exposure standards and evaluation methods that have the public confidence, then the requests made in the petition of the Association should be granted. For clearly, as the public becomes more aware of the abundant and convincing evidence shown above based, should the Commission not adopt requested exposure levels, then there will likely be adverse effects reported, tort liability suits, numerous different operation and land use standards, and an undermining of the legitimacy of the Commission and confidence in the industry.

While it may be inconvenient to develop a multi-billion dollar infrastructure based on exposure criteria that are 7% or less of those proposed by the Commission, if this level or a more stringent one is needed to avoid high risks of adverse effects, then over the long term, such an infrastructure will be more stable, than one built by pretending science indicates the current hazard threshold of the Commission is valid, where clearly it is not. The transmitters that have been placed are only a fraction of what will be placed. Hence, to avoid costly changes later demanded by a knowledgeable public, the Commission and operators can best achieve a "clear bright line" by applying an "abundance of caution" now and adopting the requests of the Association. Therefore, the Commission has been strongly requested by the Association in its petition to follow its policy of defering to the federal health agencies and to get their input on the requests of the Association, especially for the foregoing key requests for which there is abundant supporting evidence.

Respectfully submitted on behalf of Ad-Hoc Association of Parties Concerned About the Federal Communications Commission's Radiofrequency Health and Safety Rules et al

Signature:  Dated: October 28, 1996

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Submitting one original and fourteen copies of the foregoing motion and reply to the Secretary, Federal Communications Commission, 1919 M Street, N.W., Room 222, Washington D.C., 20554 plus copies to the parties on the following list

Certificate of Service

I, David Fichtenberg, hereby certify that on this, the 28th day of October, 1996, a copies of the foregoing Motion and Reply to oppositions to the Petition For Reconsideration of the Association were mailed first class, postage prepaid to the following:

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